I. C. 6418 DECEMBER, 1930

DEPARTMENT OF COMMERCE

UNITED STATES BUREAU OF MINES
SCOTT TURNER, DIRECTOR

INFORMATION CIRCULAR

MEN AND MINES

RECEIVED
JAN 16 1931
O. S. U. LIBRARY

BY

SCOTT TURNER, DIRECTOR

Generated on 2024-09-16 23:50 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

I. C. 6418
December, 1930.

INFORMATION CIRCULAR

DEPARTMENT OF COMMERCE - BUREAU OF MINES

MEN AND MINES [1]

By Scott Turner, Director

Many of you radio listeners have probably never seen a mine. You may be glad of it, but you should not forget that there is a vast army of men in this country who not only have to see mines, but have to work in them day by day in order that you may be supplied with many of the things you need. Specifically, nearly a million men work in the mines of the United States, 700,000 in the coal mines, 110,000 in the metal mines, 100,000 in other mines and quarries, and 75,000 in the oil and gas fields.

On a stormy night, the average citizen is apt to think of the perils of the seaman. Particularly in the old days before steamships, many a prayer went up "God help the poor sailor on a night like this." At the same time, the sailormen often expressed fear for the poor landlubber, exposed as he was to the danger of falling chimneys, swaying signboards, and uprooted trees.

So with the miner. Many of you may pity him, for working underground in complete darkness except for feeble artificial lighting, mining coal or ore, drilling hard rock, handling explosives, and perhaps breathing vitiated air. On the other hand, on stormy days, with rain, snow or hail falling, and with the temperature low, or on hot bright days, I have often heard miners joke about the poor fellows who had to stay "on top," and could not get "down below" where there was no wind, where no snow fell, where the temperature was unchanging, and where a man could have his own working place, arranged to suit himself, with little interference from meddlers and with no automobiles to dodge. So do not feel too sorry for the miner. He is quite apt to be a strong, healthy, hearty person, making pretty good wages, and fairly well contented with his lot.

1 - Radio address over the Columbia Broadcasting Network, through Station WMAL, Washington, D. C., December 14, 1930. The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used. "Reprinted from U. S. Bureau of Mines Information Circular 6418."

8723

Generated on 2024-09-16 23:52 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Metals do not grow on shelves in warehouses, to be ordered by telephone as needed. Perhaps 35 different metals are required to make an automobile; stop and think of the long road each may have traveled, and the changes it has undergone, since it was first uncovered, perhaps in some distant land. Lacking minerals, you, Mr. Radio Owner, would soon find yourself in an awkward predicament; without the products of the mineral industries, our United States, deprived of power and energy, would stagnate and be in acute distress within a week.

If minerals had never been available, the human race would not have developed. If we should be deprived of them now, all our achievements would go for naught, and we soon again would be savages. Only a few realize the extent of our country's mineral industries, their worth, the number of people directly concerned, or the degree to which the existence of this Nation depends upon them.

When speaking of the products of our mines, the average person perhaps thinks of the mineral fuels coal and petroleum, or the better-known metals, such as iron, copper, lead, zinc, aluminum, gold, silver, tungsten, and tin. I just named these in the order of their relative value as produced in the United States. The iron we produce is worth almost three-quarters of a billion dollars; our copper brings about 8 times as much as our gold; either our lead or our zinc is worth more than twice the silver we mine; American coal alone was valued at over $1,380,000,000 last year.

There are scores of other minerals and substances essential to our safety, comfort, and welfare. In this country, we also produce cement, stone, natural gasoline, gravel, sand, sulphur, gypsum, clay, phosphate, slate, and asphalt. Again, I have named them in the order of their annual sale value. Either our gravel or our sand is worth more than our gold, and our sulphur sells for more than our silver. You perhaps would not guess that American cement alone is annually worth over a quarter of a billion dollars.

We produce salt for flavoring and for industrial purposes; clay and slate for construction and other uses; asphalt for our roads and roofs; platinum and allied metals for special purposes; potash for chemicals or fertilizers; mercury for the explosives manufacturer, the scientific instrument maker, the physician, and the electrician; fluorspar for the steelmaker; also talc, bauxite, cadmium, barite, bromine, magnesite, and feldspar for a variety of purposes. Again, the units in this group are named in the order of their value. The head of this list, American salt, sells for more than twenty-five million dollars annually, and the lowest in the list, feldspar, is valued at a million and a quarter dollars each year.

Generated on 2024-09-16 23:52 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

A few of the commercial minerals are not produced within the borders of the United States. Unfortunately, we win but little asbestos, tin, or nickel, but more than 100 essential minerals are mined in this country.

Minerals enter into the composition of almost every object with which we come in contact in our daily life, and without minerals none of these objects could be manufactured, transported, or set in place. Our houses, offices, factories, highways, and all the great engineering enterprises over which we marvel, are made possible only through minerals. Every means of transportation - steam or electric railway, steamship, airplane or automobile - depends absolutely upon the mineral industries. Every means of communication - telephone, telegraph, submarine cable, radio - relies upon the products of the mines. Our dishes, tools, implements, coins, office appliances, musical instruments and weapons, are largely or wholly constructed of products of minerals. Without minerals, we could not temper the cold of winter or mitigate the scorching heat of summer. Lacking the varied mineral materials, there would be no metal for our machines, and no power to make them hum and whirr.

The value of the annual production of the primary mineral industries of the United States, including metallurgical works and oil refineries, amounts to approximately $7,000,000,000. When the raw materials of our mines are converted by the manufacturing industries into finished articles, the total value of products coming annually from the mines and from the mineral-using industries amounts to about $17,000,000,000. After these mineral commodities have passed through retail-trade channels, their total value exceeds $20,000,000,000.

Production of the raw-mineral materials gives employment to more than a million and a half workers; the fabrication of these raw materials into finished products employs two million more; and the distribution of these articles to the consumer employs another host. So that in the various stages of mining, manufacture and distribution, the mineral materials furnish employment to many millions.

The value of the products of the mineral industries, when they reach the consumer, is approximately equal to the value of agricultural products, each industry accounting for about one-fourth of our total national income. The mineral industries in the raw-materials stage alone pay direct taxes to the Government amounting to five times all the other raw-material industries put together.

The raw products of the mines constitute 55 per cent of the revenue-tonnage of the nation's railways, and when the manufactures of raw minerals are added, the mineral industries contribute 65 per cent, or approximately two-thirds, of all the revenue tonnage traveling over the country's network of railways.

Every State in the Union contributes substantially to our mineral output. From tiny Delaware, with half a million dollars worth of mineral products annually, the scale ranges up to Pennsylvania, with an output valued at almost a billion dollars. Each of fourteen States produces

Generated on 2024-09-16 23:51 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

annually more than $100,000,000 worth of raw minerals, and 23 States each produce more than $50,000,000 annually.

Realizing the nation's dependency on the products of our mines and quarries; the number of men employed, the hazards of the occupation, the necessity for proper production, utilization and conservation of our mineral resources; the industrial and strategic value of our minerals; and the revenue-paying character of our mining and metallurgical works, it is easy to understand why the Federal Government interests itself in mining, and why it is necessary to have the United States Bureau of Mines.

This Bureau was established in 1910; the immediate reason was the necessity of determining the causes of a series of major explosions in American coal mines. Thus the Bureau's first duty was to promote safety in the mines. Later, it was charged with the duties (I quote the Organic Act) of "conducting inquiries, and scientific and technologic investigations, concerning mining, and the preparation, treatment, and utilization of mineral substances with a view to improving health conditions, and increasing safety, efficiency, economic development, and conserving resources through prevention of waste in the mining, quarrying, metallurgical, and other mineral industries; to inquire into the economic conditions affecting these industries; to investigate explosives and peat; and on behalf of the Government, to investigate the mineral fuels and unfinished mineral products belonging to, or for the use of, the United States, with a view to their more efficient mining, preparation, treatment, and use; and to disseminate information concerning these subjects." That is as far as I will quote, although there is much more to the legislative act; it goes on to require us to make investigations and reports concerning the nature, causes, and prevention of accidents; the improvement of conditions, methods, and equipment, with special reference to health, safety, and prevention of waste in the mining industry. Moreover, we are charged, among other duties, with studying explosives and electricity, safety methods and appliances; and with rescue and first-aid work, and ascertaining causes of, and ways to prevent mine fires. Thus you can see how the Federal Government, through its Bureau of Mines, is interested in the business of mining.

This Bureau has endeavored to assist industry by conducting numerous investigations regarding the treatment of low-grade ores and minerals that could not be profitably treated by previously-used methods, and by seeking improvements in ore-dressing whereby losses of valuable minerals would be lessened. The Bureau maintains eleven experiment stations in different mining regions. The technical staffs of these stations are continually studying problems pertaining particularly to local mineral industries.

The miner who works underground to supply you with mineral materials encounters various difficulties and hazards. He may work in confined spaces; he is often exposed to dangerous atmospheres or gases; he must handle high explosives, and be on the lookout for moving trains of coal or ore and for wires charged with electricity.

As stated, the series of terrible coal-mine explosions in Pennsylvania and West Virginia so shocked the Nation as to bring about an urgent demand for the immediate creation of a Federal Bureau of Mines, whose foremost duty should be to make safer the job of being a miner.

Generated on 2024-09-16 23:52 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

By developing safer types of explosives, miners' lamps, and electrical mining equipment, by proving that rock-dusting of coal mines helps to prevent major explosions, and in various other ways, the Bureau has been able to help. Last year, the Bureau's instructors trained more than 100,000 miners in first-aid and mine-rescue methods, thus preparing them to move promptly and efficiently to the aid of their comrades in times of peril and distress.

The United States is the greatest coal-producing and coal-consuming nation. Yet before the establishment of the Bureau of Mines very little was known regarding the characteristics of the great variety of coals mined in more than 30 of the States. Results of the Bureau's studies have been presented in numerous bulletins showing the particular uses for which the coals of each field or bed are best adapted, and the best methods for the preparation and utilization of each coal. This information has practical value, both to the power-plant operator and to the householder with a furnace. The Bureau buys, stores, and delivers the coal used by Government in the District of Columbia, amounting to 275,000 tons each year, and furnishes consulting service regarding the purchase and use of all coal that the Government buys.

In the country's extensive petroleum fields, no more than 15 to 20 per cent of the oil in the underground reservoirs has generally been extracted. The Bureau is helping to increase the percentage of recovery of oil, a matter of real concern to the millions of us who operate automobiles.

The United States is the only Nation now able to employ nonflammable, safe helium gas to lift its dirigibles. A few years ago, helium was one of those elements which only the chemist could produce; the Bureau of Mines has been instrumental in devising methods whereby the cost of helium was greatly lowered. This Bureau now supplies all the helium for our military services, and has just developed new reserves, perfected new processes, and built a new plant in which the gas can be produced at a net cost to the Government of about one cent per cubic foot, thus removing it from the luxury class.

The Bureau is working on processes for obtaining a large number of valuable commercial products from natural gas which in years gone by was allowed to escape into the atmosphere. Pipe lines hundreds of miles in length and costing millions of dollars are being extended over the country to carry natural gas from producing fields to consuming centers. Leakages of gas from these pipe lines have occasioned losses amounting to hundreds of thousands of dollars, and the Bureau has shown how some of these losses may be avoided.

Some Western States have large deposits of complex ores which are extremely difficult to treat profitably; these contain lead, zinc, silver, iron, and other metals. The Bureau has assisted the development and application of flotation, and other processes, by which these stubborn ores have been made to contribute to the wealth of the Rocky Mountain region.

Manganese, essential in the making of steel, is a commercial and military necessity. The United States imports large tonnages of manganese

Generated on 2024-09-16 23:51 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

ore, although there are low-grade deposits in various parts of our country. The Bureau is assisting in devising processes which may make the utilization of these low-grade deposits commercially feasible.

Just what happens inside an iron blast furnace in operation has been somewhat of a metallurgical mystery. The Bureau of Mines has built and operates the only experimental blast furnace in the world; thus it is helping to simplify and make more efficient the making of pig iron.

In Texas and New Mexico, the Bureau is exploring by diamond-drills, to help develop an American potash industry, and thus relieve the American farmer from dependence on foreign potash. The Bureau has demonstrated that American kaolins can be used in substitution for the foreign product in the making of chinaware, and is helping to establish domestic mica, ocher, and other nonmetallic mineral industries.

In the brief time allotted, it has been possible to mention but few of the studies conducted, or the services performed, by the Bureau of Mines in upbuilding American mineral industries. I trust, however, that I may have given you an idea of the general work and purpose of the United States Bureau of Mines.

Generated on 2024-09-16 23:51 GMT / https://hdl.handle.net/2027/osu.32435030644223
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY